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(54) Title: PROCESS FOR THE DISSOLUTION OF ACTINIC OXIDES

(57) **Abstract:** The invention provides a process for dissolving actinic oxides, the process comprising performing the steps of (a) introducing the actinic oxides into a solution of nitric acid; (b) treating the acidic solution in order to substantially remove palladium; and (c) treating with divalent silver. Preferably, the actinic oxides are comprised in spent nuclear fuel. Optionally, the process comprises a second treatment of the acidic solution in order to substantially remove palladium and a second treatment with divalent silver. The steps may be performed on a batchwise or continuous basis. The treatment to remove palladium is preferably carried out by solvent extraction or ion exchange, and provides greatly improved rates of dissolution of oxides of plutonium. The treatment with divalent silver preferably involves the addition of a source of monovalent silver, followed by an electrolysis treatment to generate divalent silver.